

CLAIMS

What is claimed is:

1. An air cleaning apparatus, comprising:
a longitudinal cabinet to stand on a support surface, and having a hollow cylindrical shape;
an air cleaning unit installed in the cabinet to move in a vertical direction, and provided with a blowing unit and a filtering unit to clean air; and
an elevating unit provided at at least one of the cabinet and the air cleaning unit to move the air cleaning unit in the vertical direction.
2. The air cleaning apparatus according to claim 1, further comprising:
upper and lower sensors which are provided on upper and lower portions of the cabinet, respectively, to sense air pollution levels of upper and lower parts of a room.
3. The air cleaning apparatus according to claim 2, further comprising:
a control unit to control the air cleaning unit so that the air cleaning unit moves upward or downward, according to data obtained from the upper and lower sensors.
4. The air cleaning apparatus according to claim 1, wherein said elevating unit comprises:
a rack longitudinally provided at a predetermined portion of the cabinet;
a pinion to engage with the rack; and
a motor provided at the air cleaning unit to rotate the pinion clockwise or counterclockwise.
5. The air cleaning apparatus according to claim 1, wherein said cabinet has a cylindrical shape with vertical openings being provided at opposite sides of the cabinet to circulate room air, and
said air cleaning unit comprises:
a casing having a cylindrical shape and an outer diameter to correspond to an inner diameter of the cabinet so that the air cleaning unit moves in the cabinet in the vertical direction; and

an air inlet port and an air outlet port provided on the casing at positions to correspond to the vertical openings so that the air inlet port communicates with the air outlet port, said blowing unit and filtering unit being installed in the casing.

6. The air cleaning apparatus according to claim 5, wherein said blowing unit comprises:

a cross-flow blowing fan longitudinally installed in the casing of the air cleaning unit; and
a fan motor installed in the casing to rotate the blowing fan.

7. The air cleaning apparatus according to claim 5, wherein said filtering unit comprises:

a filter casing removably mounted to the air inlet port of the casing; and
at least one filter installed in the filter casing.

8. The air cleaning apparatus according to claim 7, wherein said filter, installed in the filter casing, comprises:

an antibacterial free filter, an electrostatic dust filter, and a fine dust filter which are arranged to be superposed.

9. The air cleaning apparatus according to claim 5, wherein said elevating unit comprises:

a rack longitudinally provided at an inner surface of the cabinet;
a guide channel longitudinally provided at an outer surface of the casing to receive the rack, guiding an elevating movement of the casing;
a pinion to engage with the rack, and rotatably supported by the casing; and
a motor provided at the casing to rotate the pinion clockwise or counterclockwise.

10. The air cleaning apparatus according to claim 5, further comprising:
a control panel mounted to a top of the cabinet, and provided with a plurality of control buttons to control an operation of the air cleaning apparatus and a display to display an operating state of the air cleaning apparatus.

11. The air cleaning apparatus according to claim 1, further comprising:

a disc-shaped support base provided on a bottom of the cabinet to support the cabinet, and having an outer diameter larger than an outer diameter of the cabinet.

12. The air cleaning apparatus according to claim 5, further comprising:
an air discharging grill mounted to the air outlet port of the casing to guide a discharging direction of the air.

13. The air cleaning apparatus according to claim 7, wherein a size of the filter casing corresponds to the air inlet port of the casing.

14. The air cleaning apparatus according to claim 7, wherein the filter casing comprises an air sucking grill to suck in the room air.

15. The air cleaning apparatus according to claim 8, wherein the filter casing comprises:

filter support walls provided at opposite sides of the filter casing to support the antibacterial free filter, the electrostatic dust filter, and the fine dust filter.

16. An air cleaning apparatus, comprising:
a longitudinal cabinet to stand on a support surface;
an air cleaning unit installed in the cabinet to move in a vertical direction;
an elevating unit provided at at least one of the cabinet and the air cleaning unit to move the air cleaning unit in the vertical direction;
a plurality of sensors provided in the cabinet to sense room air pollution levels; and
a control unit to control the air cleaning unit to move in the vertical direction based on data obtained from the sensors.